OSWER Innovations Pilot

Deconstruction for Urban Revitalization

The Office of Solid Waste and Emergency Response (OSWER) initiated a series of innovative pilots to test new ideas and strategies for environmental and public health protection. A small amount of money is set aside to fund creative proposals. The creative projects test approaches to waste minimization, energy recovery, recycling, land revitalization, and homeland security that may be replicated across various sectors, industries, communities, and regions. We hope these pilots will pave the way for programmatic and policy recommendations by demonstrating the environmental and economic benefits of creative, innovative approaches to the difficult environmental challenges we face today.

BACKGROUND

An estimated 300,000 buildings are demolished each year in the United States. The demolition industry focuses on removing structures as quickly and inexpensively as possible and, for the most part, does not work to salvage recoverable materials in the process. Valuable wood framing, flooring, doors, and a wide range of other materials end up in the waste stream. An estimated 65 million tons of demolition waste are produced each year, and only 20 to 30 percent of this waste is reused or recycled.

Deconstruction is re-emerging as an industry in the United States because of the recognition of the value of used building materials and the need to reduce the amount of demolition debris in the waste stream. Deconstruction is the planned disassembly of buildings with the purpose of harvesting materials for reuse. The main barrier to wide-scale deconstruction is the high cost of removing the materials.

PILOT APPROACH

The Institute for Local Self-Reliance (ILSR), in partnership with Penn State's Hamer Center for Community Design Assistance and EPA Region 3, is working with the City of Philadelphia Neighborhood Transformation Initiative (NTI) to develop a strategy for incorporating the practice of deconstruction as an economically viable component of NTI demolition packages. NTI is a comprehensive five-year plan that addresses urban blight through a multi-faceted program to preserve and build healthy communities throughout the city. One of the many goals of the program is the demolition of 10,000 houses that are structurally unsound. NTI recognizes the value that still exists in salvaging materials from condemned buildings and is exploring ways to cost-effectively recover these materials.

The pilot will test the cost-effectiveness of an innovative approach to deconstruction where row houses are dismantled by cutting the roof and floor panels into sections and lifting each section on to a flat-bed truck. The sections are transported off-site to separate, de-nail, trim, stack, and bundle the individual pieces of lumber. Cost effectiveness of deconstruction will be improved by mechanized assistance for de-nailing and separating along with other innovative deconstruction techniques. All aspects of the project will be tracked, including labor, machinery, transportation for workers, disposal, and salvage. The baseline measure will be the amount Philadelphia currently pays for demolition and landfilling. The final evaluation will include an assessment of the pilot findings, outreach efforts, and methods to encourage use of recommended practices by demolition companies.

INNOVATION

The pilot will demonstrate new panelized and mechanized techniques for dismantling urban row houses to reclaim the maximum amount of roof and floor structural lumber in the most cost-effective manner. If the pilot can demonstrate that these new techniques are cost-effective, there are opportunities for wide-scale implementation through the partnership with the Philadelphia NTI program to incorporate innovative deconstruction practices throughout the city. Deconstruction experts in Pittsburgh also have expressed a strong interest in this project.

BENEFITS

The project will encourage local and regional demolition and deconstruction industries to begin the process of lumber reclamation from the remaining 10,000 buildings to be removed under the NTI over the next 3-5 years. A mechanized and panelized approach to removing roof and floor assemblies from row houses will reduce the time and space requirements, thereby reducing exposure to safety hazards and enabling quicker access to properties by redevelopers. In addition, off-site deconstruction will enable improved recovery of materials and also has the potential to reduce overall costs by using mechanical labor. The potential landfill avoidance from deconstruction of 10,000 row houses is enormous further, the potential for business development and job creation is excellent.

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For additional information, visit the EPA OSWER Innovations web site at: www.epa.gov/oswer/iwg.

Solid Waste and Emergency Response (5101T)

EPA 500-F-04-026
July 2004
www.epa.gov/oswer/iwg